SAGE-II Requirements - DMR/MRR

#	Description	SAFS	ATS	RF	WOTIS	Networks	FDF	Source	Comment
1	2 acquisitions per day, WFF only	X	X	X	X	X		DMR - 1100 Project Description	This is repeated several times in the requirements.
2	archival of raw data for at least two weeks			X				DMR - 1130 Mission Operations Concept	This is assumed to be tape data. Archive on SAFS is unspecified.
3	data quality monitoring		X		X			DMR - 1130 Mission Operations Concept	
4	supporting data transfers to LaRC.	X						DMR - 1130 Mission Operations Concept	
5	Upon receipt at WFF, raw SAGE data is automatically transferred to the SAGE III operations center for Level 0 processing	X						DMR - 1130 Mission Operations Concept	SAFS will use a "push" protocol and currently in testing to use transfer of Fastcopy reports instead of email for handshaking protocol.
6	Feasibility of transmitting SAGE housekeeping data in real time to the SAGE III operations center at LaRC via the Internet is being explored			X				DMR - 1130 Mission Operations Concept	This has not yet been discussed between WFF / LaRC.
7	ESDIS project will provide link operations and data transfer links between LaRC and WFF. Definition, development support, maintenance and testing between U.S. and Russia will be conducted by ESDIS.					X		DMR - 1130 Mission Operations Concept	Status??
8	Communications support is thought WFF, downlink only, 2x per day to capture 24 hours of science and housekeeping data.			X				DMR - 2005 Radio Frequency (RF) Telecommunication	
9	Communications support is through WFF, downlink only, 2x per day to capture 24 hours of science and housekeeping data.	X	X	X	X			DMR - 2005 Radio Frequency (RF) Telecommunication – Summary Tables	
10	1704.3384 MHz, PM, Bi-phase L, 665.4 kbps (Instrument Telemetry, SAGE III recorded data)			X				DMR - 2005 Radio Frequency (RF) Telecommunication – Summary Tables	RH or LH circular polarity?
11	Uses CCSDS Transfer Frame			X				DMR - 2020 Radio Frequency (RF) Telecommunication – Telemetry Frame Structure	

SAGE-II Requirements - DMR/MRR

#	Description	SAFS	ATS	RF	WOTIS	Networks	FDF	Source	Comment
12	WFF to support two, twelve minute nominal contacts per day, approximately 12 hours apart.	X	X	X	X			DMR - 2400 Wallops Flight Facility (WFF) Requirements - Summary	12 minutes x 665.4 kbps = 60 Mbytes
13	Data to be captured and forwarded to LaRC	X	X	X				DMR - 2400 Wallops Flight Facility (WFF) Requirements - Summary	
14	Interface to standard Internet Protocol	X			X			DMR - 2420 Wallops Flight Facility (WFF) Requirements – Downlink	Fastcopy has been negotiated and accepted; will be captured in ICD.
15	Store and forward data to LaRC	X		X				DMR - 2420 Wallops Flight Facility (WFF) Requirements – Downlink	
16	LaRC to provide schedule and acquisition data to WFF				X			DMR - 2400 Wallops Flight Facility (WFF) Requirements - Summary	
17	Data Quality Monitoring		X		X			2420 Wallops Flight Facility (WFF) Requirements – Downlink	
18	Store and forward data to LaRC. Archive raw data for a minimum of 14 days.	X		X				2420 Wallops Flight Facility (WFF) Requirements – Downlink	Gnd station will maintain raw data tapes for minimum of 14 days (digital tape is OK). SAFS will store file data for ____?? days.
19	Data flows, operations exercises and simulations will be conducted between WFF and LaRC	X	X	X	X			DMR - 3000 Testing and Training Requirements	

SAGE-II Requirements - DMR/MRR

#	Description	SAFS	ATS	RF	WOTIS	Networks	FDF	Source	Comment
21	A SAGE III data simulator or electronic file will be used as data source for interface tests			X				DMR - 3000 Testing and Training Requirements	LaRC is supplying electronic file. 2nd PTP will be used to generate clock/data.
22	Station compatibility will be shown using WFF station equipment and a Russian Engineering Test Unit (ETU), which emulates actual S/C output.			X				DMR - 3000 Testing and Training Requirements	Completed?
23	Actual recorded SAGE III telemetry or simulated telemetry will be provided to the ETU by LaRC			X				DMR - 3000 Testing and Training Requirements	LaRC is supplying electronic file. 2nd PTP will be used to generate clock/data.
24	Output of ETU connected to test inject of WFF antenna. Downlinked signal is received, demodulated and processed by WFF equipment and evaluated for thresholds and data accuracy.			X				DMR - 3100 Compatibility Testing	Completed?
25	Flight Dynamics will provide trajectory support for the mission						X	DMR - 7000 Trajectory and Attitude Support Requirements Summary	There is no attitude support required for FDF
26	Flight Dynamics will provide pre-mission coordination						X		FDF may be needed for end-to-end tests??
27	Definitive orbit analysis .. utilize Meteor 3M on-board GPS/GLONASS receiver (on reading per						X	MRR	
28	2. Provide consultation as necessary						X	MRR	
29	Data Communications - TCP/IP between WFF and LaRC	X						MRR	Using Fastcopy, as item 11 above.
30	NASCOM Requirements: Request assessment of links between WFF and LaRC to ensure data transfer of approximately 60 Mbytes can be accomplished within one hour (to be reviewed) after reception at WFF.	X				X		MRR	If this is taken as an end-to-end requirement: PTP takedown + SAFS transfer + network latency = 60 minutes

SAGE-II Requirements - DMR/MRR

#	Description	SAFS	ATS	RF	WOTIS	Networks	FDF	Source	Comment
31	Frequency: 1704.3384 BW: 665.4 kbps (data rate) Modulation: Split Phase Subcarrier: None Data Type: Bio-L Format: PCM Command Requirements: None Radar: No			X				MRR	
32	Data Communications: TCP/IP between WFF and LaRC	X			X			MRR	
33	Pre-mission support: Compatibility Test at about L-6 months, at WFF, one week duration			X				MRR	Completed?
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